REMARKS

This Amendment After Final Rejection is submitted in response to the outstanding final Office Action, dated December 10, 2008. Claims 1 through 29 are presently pending in the above-identified patent application. In this response, Applicants propose to

5   amend claims 1, 7, 16, 22, 26, and 29 and cancel claims 5, 6, 20, and 21, without prejudice, herein. No additional fee is due.

This amendment is submitted pursuant to 37 CFR §1.116 and should be entered. The Amendment places all of the pending claims following entry of the amendments, i.e., claims 1-4, 7-19, and 22-29, in a form that is believed allowable, and, in any event, in a better form for

10   appeal. It is believed that examination of the pending claims as amended, which are consistent with the previous record herein, will not place any substantial burden on the Examiner.

In the Office Action, the Examiner rejected claims 1-11, 13-15 and 16-25 under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. (United States Patent No. 7,352,688) in view of Li et al. (United States Publication No. 2004/0258025), rejected claims 1-29 under 35

15   U.S.C. §103(a) as being unpatentable over Gardner et al. (United States Publication No. 2005/0233709) in view of Li et al., rejected claim 12 under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. in view of Li et al., and further in view of Gardner et al., and rejected claims 26-29 under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. in view of Gardner et al., and further in view of Li et al.

20   The Examiner is thanked for the courtesy of a telephone interview on March 7, 2009 where the Examiner agreed that the present amendment would be entered if the Amendment After Final Rejection was resubmitted. The Examiner also indicated that the rejection of the final Office Action would be maintained and asserted that OFDM inherently discloses long training symbols are time orthogonal by introducing a phase shift. Applicants

25   address this argument in the comments below.

Independent Claims

Independent claims 1, 16, 26 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li et al. and Perahia et al. or Gardner et al., or a combination thereof.

Applicants note that independent claims 1, 16, 26 and 29 have been amended to

30   incorporate the limitations of claim 5 and 6 and require *wherein each of said long training symbols are time orthogonal <u>by introducing a phase shift</u> to each of said long training symbols*

relative to one another. In rejecting claim 6, the Examiner asserted that Perahia discloses wherein each of said long training symbols are time orthogonal by introducing a phase shift (col. 3, lines 54-65; and col. 4, lines 49-51) and that Gardner discloses the cited limitation in paragraphs [0044] and [0070].

5   In the text cited by the Examiner, Perahia teaches "blocks 205 shift the frequency and phase of the received signal based on the measured offsets for synchronization to local timing." (Col. 4, lines 49-51.) Also, in the text cited by the Examiner, Gardner teaches:

> [0044] In this method, enough of the signal is received to identify what should be the two repeated long training symbols, typically sampled as two identical repetitions of 64 samples for each receive antenna. An FFT (fast-Fourier transform) of the sum of the two identical repetitions of 64 samples is taken, generating an output sequence $s_i(k)$, comprising 64 complex values per receive antenna, containing channel amplitudes and phases, as well as phase shifts caused by the long training symbol sequence that was actually used (e.g., sequences such as L_1, L_2, L_3 or L_4).

> [0070] A MIMO transmitter can have two or more transmit antennas (or antenna arrays, as the case may be). For a MIMO system with two transmit antennas and two different transmit data streams, preferred values for the cyclic delay values d_k are 0 and 32 samples, respectively. This corresponds to a cyclic delay of 1.6 microseconds between the two transmitters. For three transmitters, d_k can be 0, 22, and 43 samples, respectively. For four transmitters, d_k can be 0, 16, 32, and 48 samples, respectively.

25   Applicants find no disclosure or suggestion in Perahia and Gardner that *each of said long training symbols are time orthogonal by introducing a phase shift to each of said long training symbols relative to one another.*

          Regarding the Examiner's assertion that OFDM inherently discloses long training symbols are time orthogonal by introducing a phase shift, Applicants note that the independent claims require wherein each of said long training symbols are *time orthogonal by introducing a phase shift to each of said long training symbols relative to one another.* For example, the present disclosure teaches:

According to one aspect of the present invention, a time orthogonal preamble structure is employed, whereby the 802.11a/g preamble is transmitted on each antenna at the same time followed by one or more additional training symbols. Time orthogonality is maintained by employing a phase shift to distinguish each of the additional training symbols. For example, in a two antenna implementation, discussed below in conjunction with FIG. 5, one additional training symbol is transmitted on each antenna, each with opposite polarity.
(Page 6, lines 11-17.)

OFDM does not inherently *introduce a phase shift to each of the long training symbols relative to one another*.

Thus, Perahia et al., Gardner et al., and Li et al., alone or in combination, do not disclose or suggest wherein each of said long training symbols are time orthogonal by introducing a phase shift to each of said long training symbols relative to one another, as variously required by independent claims 1, 16, 26 and 29, as amended.

Dependent Claims

Dependent claims 2-15, 17-25 and 27-28 are dependent on independent claims 1, 16, and 26, and are therefore patentably distinguished over Perahia et al., Gardner et al., and Li et al., alone or in combination, because of their dependency from amended independent claims 1, 16, and 26 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

Conclusion

All of the pending claims following entry of the amendments, i.e., claims 1-4, 7-19, and 22-29, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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